



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/729,467
Applicants : Tariq M. Malik and James F. Dwyer
Filed : December 6, 2003
TC/A.U. : 1771
Examiner : U. Ruddock

Docket No. : 920036-94963

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

AFFIDAVIT UNDER 37 CFR SECTION 1.131

STATE OF ILLINOIS)
SS.:)
COUNTY OF KANE)

We, Tariq M. Malik and James F. Dwyer, being duly sworn, depose and say:

That we are co-inventors for the above-identified patent application.

That we conceived in the United States the invention claimed in the above-identified patent application prior to December 27, 2002, the earliest priority date of cited U.S. Publication No. US 2004/0161615A1 to Cohen et al. and prior to July 16, 2003, the earliest priority date of cited U.S. Publication No. US 2004/0261347 to Hageman. Attached, as Exhibit A, is a timeline, relating to this conception, setting forth the date of July 11, 2001 as the date when our vapor barrier invention of the above-identified application was first tested in our laboratory. Conception of our invention claimed in the above identified application occurred in the spring of 1999. On August 13, 1999, in a letter to Mr. Tim Ashman, we requested MOCON to test the vapor transmission rate of our vapor barrier invention. A copy of our letter to MOCON is attached as Exhibit B. MOCON provided us with the laboratory results in a report dated November 4, 1999, which is attached as Exhibit C. In order to produce a larger quantity of our

vapor barrier invention, we requested a quote for the production of our multi-layer core material from Gary Bernard of Ludlow Coated Products. Exhibit D is a memorandum, dated January 3, 2002, from Gary Bernard of Ludlow Coated Products to me, Tariq Malik, providing pricing for our custom multi-layer core material for our invention claimed in the above-identified application. Exhibit E is an invoice, dated September 9, 2002, from Ludlow Coated Products to us, for the multi-layer core material used as the core material for our invention claimed in above-identified application. The multi-layer core material set forth in the invoice of Exhibit E was shipped by Ludlow on September 16, 2002 and received by us on September 20, 2002, as shown in Exhibit F.

That pursuant to this conception, we actually reduced to practice in the United States, the invention claimed in the above-identified patent application prior to December 27, 2002, the earliest priority date of cited U.S. Publication No. US 2004/0161615A1 to Cohen et al. and prior to the July 16, 2003 earliest priority date of cited U.S. Publication No. US 2004/0261347 to Hageman. Attached as Exhibit G, is a copy of a confidential test proposal, dated May 8, 2002, from MOCON Corporation to us regarding the testing of our vapor barrier invention claimed in the above-identified application. Exhibit H is a copy of a letter, dated July 8, 2002, from me, Tariq Malik to Mr. Sam Allen of TRI/Environmental Inc. requesting him to perform a baseline water vapor permeance (perm) test per ASTM E96, Procedure B, on our vapor barrier invention claimed in the above identified application. Exhibit I is a copy of an analysis report, from MOCON Corporation to me Tariq Malik, dated July 23, 2002, for our vapor barrier invention claimed in the above-identified application. Exhibit J is an interoffice memorandum from me, Tariq Malik regarding the testing of our vapor barrier invention of the above-identified application using ASTM standards E-96 and F-1249. The testing of our vapor barrier invention

was successful and was added to W.R. Meadows' product line as set forth in the product data brochure, released December 8, 2002 and attached as exhibit K.

That pursuant to this conception, we were also in the process of obtaining a non-provisional patent application prior to December 27, 2002, the filing dated of the cited U.S. Publication No. US 2004/0161615A1 to Cohen et al. and prior to the July 16, 2003 filing date of the cited U.S. Publication No. US 2004/0261347 to Hageman. A copy of correspondence with our patent attorneys is enclosed here as Exhibit L relating to the above identified non-provisional application.

That Exhibits A-L, which relate to the aforementioned conception and actual reduction to practice, correspond to the invention broadly disclosed and claimed in the above-identified patent application.

Further deponents saith not.

/s/

Tariq M. Malik
Tariq M. Malik

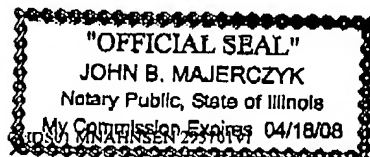
James F. Dwyer
James F. Dwyer

Sworn and subscribed to before me this

19th day of September,

2005

John B. Majerczyk
Notary Public

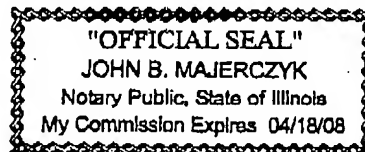


Sworn and subscribed to before me this

19th day of September,

2005

John B. Majerczyk
Notary Public



**W. R. MEADOWS SEALTIGHT® PREMOULDED MEMBRANE
VAPOR SEAL WITH PLASMATIC CORE (PMPC)**

VAPOR BARRIER
(Patent Application)

1. July 11, 2001 – First Lab Trial
2. July 16 – 31, 201 – Lab Testing
3. August 17, 2001 – Meeting with Gary Bernard of Ludlow Coated Products to make a trail core sample
4. January 3, 2002 – Price quotation received from Ludlow Corporation
5. April 8, 2002 – Sample received from Ludlow Corporation
6. May 8, 2002 – Test proposal received from MOCON Corporation
7. July 23, 2002 – Results received from MOCON Corporation
8. September 20, 2002 - Plant trial material received from Ludlow Corporation
9. November 4, 2002 – First Production batch made
10. December 4, 2002 – Letter written to management for Product Introduction
11. December 8, 2002 – Product introduced
12. December 6, 2003 – Applied for Patent

August 13, 1999

Mr. Tim Ashman
MOCON
7500 Bone Ave North
Minneapolis, MN 55428

Dear Tim;

As we discussed, enclosed are two samples of our vapor protection boards;

PMPC-1
PMPC-2

We would like to check their water vapor transmission rate using one of your systems. We would also like to visit your facilities and operation of these machines. Please let me know if it is possible. Thank you very much and I look forward to hearing from you.

Best Regards;

Tariq M. Malik, Ph.D.
Technical Director

mocon

*file
pmc*

Consulting and Developmental Services

Report Presented to

W. R. Meadows, Inc.

CONFIDENTIAL

Presented to:

**Dr. Tariq M. Malik
W. R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140**

November 4, 1999



November 4, 1999

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November 4, 1999

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MOCON is pleased to provide the following project report for Consulting and Developmental Services to W. R. Meadows, Inc.

This report contains a review of the project objective, background, a complete set of data, and testing observations and recommendations for future studies.

If after reviewing this report you have any questions, please feel free to contact Dave Maki, at 612-493-7228.

763

Dave Maki, Project Scientist, CDS

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November 4, 1999

CONFIDENTIAL**PROJECT OBJECTIVE:**

Determine the water vapor transmission rate of vapor protection board samples labeled PMPC Experimental 1 and W. R. Meadows PMPC.

BACKGROUND:

W. R. Meadows, Inc. requested MOCON to determine the water vapor transmission rate (WVTR) of two types of vapor protection board samples. The request was to determine the feasibility of using a Permatran-W® 3/31 (Fig. 1) to analyze their samples in a quality assurance setting. The current method used by W. R. Meadows, Inc. is ASTM F-96, a cup method. Integrating the Permatran-W® 3/31 would decrease the material exam times and labor investment.

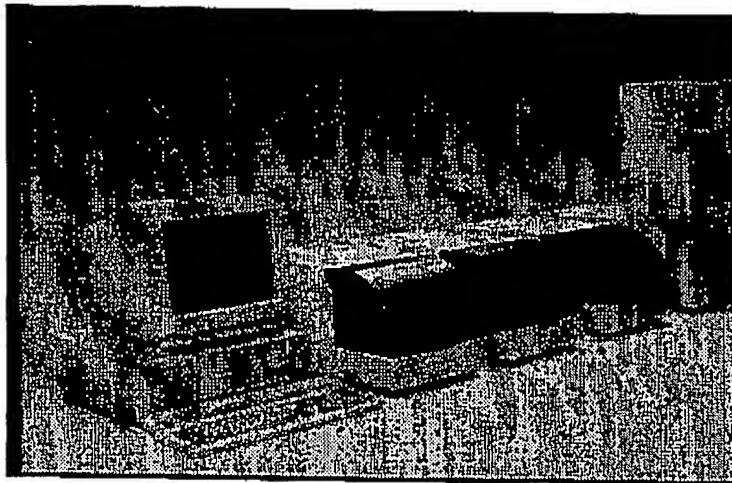


Figure 1. Permatran-W® 3/31 Modules and Computer.

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CONFIDENTIAL**PROCEDURE:**

The water vapor transmission rate was determined using a Permatran-W® 3/31 in accordance with ASTM method F-1249. The conditions were ambient laboratory temperature 23°C (73.4°F) and precisely 50% relative humidity (RH). The samples had water vapor challenging the exterior and dry nitrogen carrier gas purging the interior (fig. 2). The purged nitrogen gas plus transmitted water vapor is then driven to the sensor. A modulated infrared sensor is used in the Permatran-W 3/31 and was calibrated using National Institute of Standards and Technology (N.I.S.T.) traceable certification films.

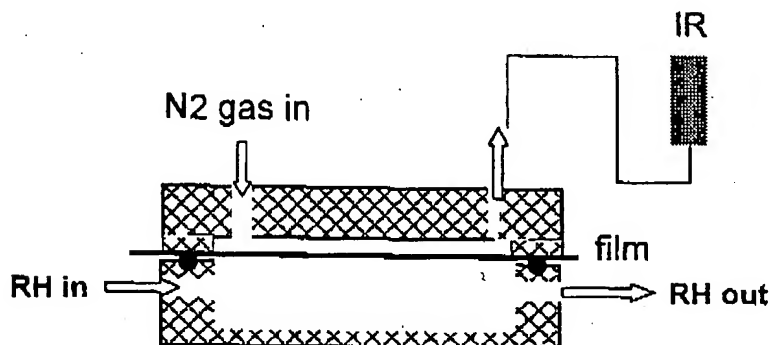


Figure 2. Experimental set-up for an isostatic permeation study.

The thickness of the samples required the use of two different masks. One mask to define the area, the second to eliminate edge leakage (fig. 3).

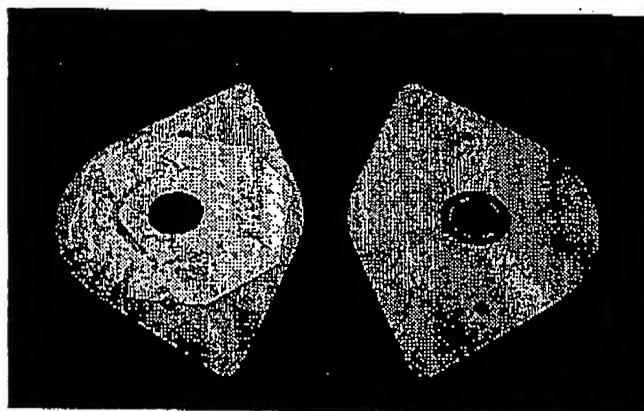


Figure 3. Example of the testing apparatus.



November 4, 1999

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STUDY RESULTS:

The results for the samples analyzed are presented below.

Table 1. Water Vapor Transmission Rates for PMPC Experimental 1 Sample.

SAMPLE	REPLICATE	TR (GM/(M ² *DAY))	TR (GRAINS/(FT ² *HR.))	PERMS
Experimental	A	0.683	0.0408	0.021
	B	0.718	0.0429	0.023

Table 2. Water Vapor Transmission Rates for Sample W. R. Meadows PMPC.

SAMPLE	REPLICATE	TR (GM/(M ² *DAY))	TR (GRAINS/(FT ² *HR.))	PERMS
PMPC	A	0.101	0.0060	0.003
	B	0.103	0.0062	0.003

Example Calculation;

$$(0.683 \text{ gm}/(\text{m}^2 * \text{day})) (15.43236 \text{ grains}) \left(\frac{1}{10.736 \text{ sq. ft.}} \right) \left(\frac{1}{24 \text{ hours}} \right) = 0.0408 \text{ grains}/(\text{ft}^2 * \text{hr})$$

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November 4, 1999

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CDS

Analysis Report

JOB NUMBER: TR

Dr. Tariq Malik
W. R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140

We are pleased to present the test results for your
Material submitted under:

PO# 29429

DATED: 11-4-99

TEST CONDITIONS:

Material Type: vapor protection
board

Thickness: N/A

Permeant: Water vapor

Permeant Concentration: N/A

Analysis RH: 50%

Temperature: 23C, 73.4F

TEST RESULTS: PMPC Experimental 1

SAMPLE	REPLICATE	TR (GM/(M ² *DAY))	TR (GRAINS/(FT ² *HR.))	PERMS
Experimental	A	0.683	0.0408	0.021
	B	0.718	0.0429	0.023

REMARKS:

TEST OPERATOR:

DATE: 11/4/99

This information represents our best judgement
based on work done, but the company (MOCON)
assumes no liability whatsoever in connection
with the use of information or findings contained
herein.

MOCON/MODERN CONTROLS, INC.
7500 BOONE AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55428 U.S.A.
TEL: (612) 493-6370 FAX: (612) 493-6358



November 4, 1999

CONFIDENTIAL

CDS

Analysis Report

JOB NUMBER: TR

Dr. Tariq Malik
W. R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140

We are pleased to present the test results for your
Material submitted under:
PO# 29429
DATED: 11-4-99

TEST CONDITIONS:

Material Type: vapor protection board

Thickness: N/A

Permeant: Water vapor

Permeant Concentration: N/A

Analysis RH: 50%

Temperature: 23C, 73.4F

TEST RESULTS: W. R. Meadows PMPC

SAMPLE	REPLICATE	TR (GM/(M ² *DAY))	TR (GRAINS/(FT ² *HR.))	PERMS
PMPC	A	0.101	0.0060	0.003
	B	0.103	0.0062	0.003

REMARKS:

TEST OPERATOR:

DATE: 11/4/99

This information represents our best judgement based on work done, but the company (MOCON) assumes no liability whatsoever in connection with the use of information or findings contained herein.

MOCON/MODERN CONTROLS, INC.
7500 BOONE AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55428 U.S.A.
TEL: (612) 493-6370 FAX: (612) 493-6358

27 W 140 Roosevelt Rd.
Winfield, IL 60190
Tel# 630-462-6074
Fax# 630-462-6075
Email gbernard@ludlowcp.com

DATE: 01/03/2002 TIME: 10:59 AM
TO: TARIQ MALIK 847-683-4544
FROM: GARY BERNARD
RE: FILM PRICING
CC:

Tariq:

I have prepared a summary of material options and prices for your review. Note these pertain to your 1st project.

	<u>500 MLF</u>	<u>1 MMLF</u>	<u>2 MMLF</u>
1. 48 Ga. PET/Adh/.00035 Foil/Adh/48 Ga. PET (Note this material was offered in our trial order)	\$40.08/msf	\$38.72/msf	\$37.55/msf
2. 48 Ga. PET/ 1 color green, 100% print/ Adh/ .00035 Foil / Adh/ 48 Ga. PET Film (This option was never sampled)	\$59.52/msf	\$57.23/msf	\$55.39/msf
3. 48 Ga. Chemically treated PET / 10.8# White PE/ .00035 Foil/ 10.8# White PE / 48 Ga. Chemical treated PET Film (This option was illustrated in the sample roll. It is quoted with white color 2 sides, and treated Film 2 sides)	\$50.75/msf	\$48.59/msf	\$46.92/msf
4. 48 Ga. Chemical treated PET / 100% Green print/ Adh / .00035 Foil / Adh / 100% Green print / 48 Ga. Chemical treated PET Film (This option shows both chemical treated PET 2 sides and print 2 sides. It has not been sampled)	\$70.05/msf	\$67.12/msf	\$64.85/msf

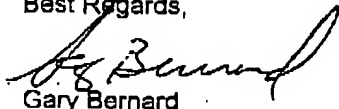
Based on rolls 48" W x 24" OD x 3" ID

FOB. Columbus, GA NFA

Please let me know how you want to proceed Tariq, or let me know if any questions.

Also, I was anxious to hear what you found in the trial roll of woven material (2nd project). Have you evaluated yet?

Best Regards,


Gary Bernard



Coated Products

REMIT TO LUDLOW COATED PRODUCTS
DBA GEORGIA PACKAGING, INC.
DEPT. CH14044
PALATINE IL 60055-4044

W. R. MEADOWS, INC. (DEL)
300 INDUSTRIAL DRIVE
P. O. BOX 338
HAMPshire
IL 60140

WR MEADOWS
ATTN: TARIQ MALIK
300 INDUSTRIAL DRIVE
HAMPshire
IL 60140

CUSTOMER ORDER NO. 71902TM	DEPT. NO. 62	REQ. SHIP DATE G. BERNARD	COAL X	PPD X	SHIPMENT NO. HOLLAND	SHIP VIA HOLLAND	OUR ORDER NO. 2242--68916	BL. NO. 9/09/02	CUSTOMER NO. 54413	
SALESMAN 62			TERMS 1% 10 NET 30			DATE SHIPPED 9/20/02	INVOICE DATE 9/20/02	INVOICE NO. 9-2230		
DESCRIPTION					ITEM NO.	QUANTITY SHIPPED	QUANTITY UNIT	UNIT PRICE	AMOUNT	
PET/WHPE/F/WHPE/PET TRIAL					B03XC2242	5451 LY	68.138	CF MSF	50.7500	3,458.00
50" X 5000 LF D Q 3334 FREIGHT AND HANDLING CHG SHIP DATE 9/20/02 5451LY # 2T LESS FREIGHT ALLOWANCE								CASH DISC. ON FREIGHT NOT ALLOWED	143.41	143.41

NOTE: PLEASE DO NOT MAKE DEDUCTIONS FROM OR ADJUSTMENTS TO THIS INVOICE WITHOUT OUR AUTHORIZATION IN ADVANCE. CORRECTIONS ALLOWED WILL BE MADE BY CREDIT OR DEBIT MEMO. PLEASE REMIT FROM THIS INVOICE. NO STATEMENT WILL BE SENT UNLESS REQUESTED. NOTIFY CARRIER APPLICABLE TO THIS SHIPMENT IN EVENT OF SHORTAGE OR DAMAGED MATERIAL, AS OUR RESPONSIBILITY CEASES WHEN GOODS ARE SHIPPED.

TOTAL 3,458.00

INVOICE

mocon®

May 8, 2002

CONFIDENTIAL

Submitted to:
Dr. Tariq M. Malik
W. R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140

Ph: 847-683-4500
Fax: 847-683-4544



MOCON is pleased to provide the following proposal in confidence for Consulting and Developmental Services to W. R. Meadows, Inc.

This proposal addresses the project objective, background information, test procedures and price. MOCON has assigned Dave Maki as Project Scientist to W. R. Meadows, Inc. water vapor transmission rate study. Dave will be responsible for all communication and coordination facets as well as all physical testing, collection and organization of data, and project reports.

If after reviewing this proposal you have any questions, please contact Dave Maki at 763-493-7207.



May 8, 2002

CONFIDENTIAL**PROJECT OBJECTIVE:**

Determine the water vapor transmission rate of vapor protection board samples.

BACKGROUND:

W. R. Meadows has requested MOCON, Inc. to determine the water vapor transmission rate of two materials. Historically, W. R. Meadows has determined the transmission rate by using ASTM standard E-96, a cup test. In an effort to obtain greater repeatability in shorter time, W. R. Meadows will analyze their vapor protection boards using ASTM 1249.

PROCEDURE:

The procedure for the project is ASTM F-1249 at the conditions stated below, as requested by W. R. Meadows, Inc.

PROJECT REPORT:

MOCON will provide W. R. Meadows, Inc. with a project report at the conclusion of this study. This report will review the project mission and objective and outline the established procedure used during this analysis. The transmission rate results will be reported in terms of ($\text{gm}/\text{m}^2 \cdot \text{day}$).

PROJECT PRICE:

W. R. Meadows will need to supply MOCON with the materials for the analyses.



May 8, 2002

CONFIDENTIAL**Table 1. The following table outlines the price for each analysis.**

STUDY DESCRIPTION	SAMPLE TYPE	ESTIMATED TIME TO COMPLETION	PROJECT PRICE*
Determination of the water vapor transmission rate through two samples at 50% relative humidity and 23°C.	Fiberglass/ petroleum asphalt vapor protection board.	Approximately 2 – 4 weeks	\$1,725.00

Project Price \$1,725.00

A purchase order number will secure a MOCON project start date.

Thank you in advance for your consideration.

Dave Maki, Project Scientist CDS

**Price quote is valid for thirty days from the date of this proposal.*

W. R. MEADOWS, INC.

P.O. BOX 338 • HAMPSHIRE, IL 60140-0338



TELEPHONE: 847-214-2100

800-825-5976

FAX: 847-683-4544

Website: www.wrmeadows.come-mail: wrmll@wrmeadows.com

July 8, 2002

Mr. Sam Allen
Vice President and Division Manager
TRI/Environmental Inc.
9063 Bee Caves Road
Austin, TX 78733

Dear Sam,

Please perform Baseline Water Vapor Permeance (perm) per ASTM E 96 Procedure B on the following products:

- W.R. MEADOWS SEALTIGHT® "PREMOULDED MEMBRANE VAPOR SEAL PLASMATIC CORE"

If you have any questions please let me know.

Your Truly,

W.R. MEADOWS, INC.

A handwritten signature in dark ink, appearing to read "Tariq Malik", written over a horizontal line.

Tariq Malik
Technical Director

TM/hmg

CDS

Analysis Report

JOB NUMBER: TR

Dr. Tariq Malik
W. R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140

We are pleased to present the test results for your
Material submitted under:

PO#

DATED: 07-23-02

TEST CONDITIONS:

Material Type: Barrier material

Thickness: N/A

Permeant: Water vapor

Permeant Concentration: N/A

Analysis RH: 50%

Temperature: 23C, 73.4F

TEST RESULTS: W. R. Meadows SEALTIGHT PREMOLDED MEMBEANE VAPOR SEAL WITH PLASMATIC CORE (PMPC)

SAMPLE	REPLICATE	TR (GM/(M ² *DAY))	TR (GRAINS/(FT ² *HR.))	PERMS
PMPC	A	0.007	0.0004	0.0010
	B	0.009	0.0005	0.0013

REMARKS:

TEST OPERATOR:

DATE:

This information represents our best judgement
based on work done, but the company (MOCON)
assumes no liability whatsoever in connection
with the use of information or findings contained
herein.

MOCON, INC.
7500 BOONE AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55428 U.S.A.
TEL: (763) 493-6370 FAX: (763) 493-6358

Inter-Office Memorandum

W. R. MEADOWS, INC. P. O. BOX 338 HAMPSHIRE, IL 60140-0338

To: Dave Duewel
Brent Weber
Jim Dwyer
Glenn Tench
Larry Meck
Matt Price

Cc: Harry Meadows

From: ~~XXXXXXXXXX~~ *Tench*

Date: December 4, 2002

Re: ASTM E-96 Water Method vs. ASTM F-1249

Please review the attached "ASTM E-96 Water Method vs. ASTM F 1249". If you have any questions, suggestions, or comments please let me know.

TM/hmg

ASTM E-96 Water Method vs. ASTM F-1249

The water vapor transmission rate (WVTR) and permeability of the W.R. MEADOWS SEALTIGHT® Premoulded Membrane® Vapor Seal with Plasmatic Core (PMPC) were determined using MOCON Permatram W 3/31 in accordance with ASTM method F-1249, "Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor". The conditions were 74°F and 50% relative humidity. The samples had water vapor challenging the exterior and dry nitrogen carrier gas purging the interior. The purged nitrogen gas plus transmitted water vapor is then driven to the infrared sensor. The modulated infrared sensor was calibrated using a reference certified film of known WVTR from National Institute of Standard and Technology (N.I.S.T). The reference values are derived from fundamental gravimetric measurements as described by Test Method ASTM E-96 "Standard Test Method for Water Vapor Transmission of Materials."

The ASTM E 1993-98 "Standard Specification for Bituminous Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slab" recommends the use of Test Method ASTM F-96 for Water Vapor Permeance (water method). This test method requires test dishes to be filled with water to a level $\frac{3}{4}$ inch from the specimen, weighing of dish assembly and placing in a controlled chamber and recording the weight changes at different time intervals. When the results of water vapor transmission are expected to be less than 0.05 perms. , the test method is not very reliable. In this case, a dummy specimen is strongly recommended. Any water contact with the specimen in the dish assembly invalidates the test. For materials having very low water vapor permeability, this method is not reproducible because of error involved in the manual weighing of the dish assembly and recoding the weight change in fraction of grams.

As PMPC is virtually impermeable to water vapors (0.00045 grains/sq.ft/hr.), its WVT rating could not be determined by ASTM E-96 water method. We have selected ASTM F-1249 method to determine the water vapor transmission and permeance rating of PMPC due to its automatic technique and a very accurate infrared sensor used to determine the transmitted water vapors. TRI / Environmental, Inc. a well known WVT testing laboratory also suggested we use ASTM F-1249.

An excellent correlation was found between ASTM E-96 water method and ASTM F-1249 method for WVT testing of Polyethylene Terephthalate and Low Density Polyethylene by a fourteen-lab round-robin test program, conducted by MOCON, manufacture of Permtran W 3/13.



PRODUCT DATA

W. R. MEADOWS. SEALTIGHT.

CSI Code: 07130

No. 711

DECEMBER 2002
(Supersedes June 2002)

PREMOULDED MEMBRANE® VAPOR SEAL with PLASMATIC® CORE

DESCRIPTION

PREMOULDED MEMBRANE VAPOR SEAL with PLASMATIC CORE (PMPC) is a seven-ply, weather-coated, permanently bonded, semi-flexible bituminous core board. It is composed of a homogeneous, high-melt point bituminous material, in combination with an exclusive plasmatic core, suspended mid-point in the bituminous core. This core is sealed under heat and pressure between liners of asphalt-impregnated felt and a glass mat liner. An asphalt weather coat is applied to the glass-mat liner and covered with a polyethylene anti-stick sheet.

PMPC provides a positive, easy-to-install, economical, true vaporproofing and waterproofing system for horizontal applications. Properly applied, it stops moisture migration in footings, concrete floors and structural slabs. PREMOULDED MEMBRANE VAPOR SEAL with PLASMATIC CORE is both waterproof and vaporproof.

It offers a (WVT) water vapor transmission rating of 0.00045 grains/sq. ft./hr and a perm rating of less than 0.002 perms, the lowest in the industry. The product is the ultimate when a true vapor seal is required. Among its unique features is the built-in protection course, which resists job-site puncturing and the abrasive action of concrete placement. PMPC conforms to ASTM E 1993-98 Specification. The exclusive PLASMATIC CORE adds flexibility, greater tensile strength, puncture resistance and excellent handling characteristics. PMPC helps meet and maintain the maximum slab moisture transfer rate of 3 lbs./1000 sq. ft./24 hours, allowed by the flooring industry specifications.

USES

SEALTIGHT PMPC, when properly applied, is designed to stop moisture migration (liquid or vapor) in footings, concrete floor slabs and structural slabs, which helps reduce fungus, mildew and mold. It is especially useful under slabs overlaid with wood, tile, epoxy and urethane coatings, carpeting and resilient or seamless flooring systems since it helps prevent the warping and buckling caused by moisture migration. It also is resistant to radon gas.

MAINTAIN ENERGY EFFICIENCY

SEALTIGHT products used in conjunction with structural construction aid in the integrity of other structural systems such as insulation. Because wet insulating materials lose much of their R factor performance characteristics, this reduces the energy efficiency of the structure. SEALTIGHT products applied for thermal and moisture protection help prevent moisture or vapor penetration into the other systems. These products play a key role in maintaining the structure's energy efficiency.

FEATURES AND BENEFITS

- Offers a virtually impermeable vaporproofing system with a WVT rating of 0.00045 grains/sq. ft./hr. and a perm rating of less than 0.002 perms. That's the lowest WVT available.
- As the only true vapor barrier for horizontal applications, it is both waterproof and vaporproof.
- Provides excellent tensile strength and puncture resistance
- Deters warping, buckling or delamination of subsequent flooring systems
- Conforms to ASTM E 1993-98 Specification
- Helps reduce fungus, mildew and mold
- Helps reduce radon gas from entering a structure
- Helps meet and maintain the maximum slab moisture transfer rate of 3 lbs./1000 sq. ft./24 hours, allowed by the flooring industry specifications

SPECIFICATIONS

ASTM E 1993-98*

*Standard Specification for Bituminous Water Vapor Retarders used in Contact with Soil or Granular Fill under Concrete Slabs.

PACKAGING

	Width	Length	Weight
Sheets	48" (1.22m)	8' (2.44m)	60 lbs./100 sq. ft. (27.22 kg)
Rolls	48" (1.22m)	50' (15.24m)	60 lbs./100 sq. ft. (27.22 kg)

CONTINUED ON REVERSE SIDE

W. R. MEADOWS, INC.

P.O. Box 338 • HAMPSHIRE, IL 60140-0338
Phone: 847/214-2100 • Fax: 847/683-4544
1-800-342-5976
www.wrmeadows.com

HAMPSHIRE, IL / CARTERSVILLE, GA
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SEALTIGHT

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PHYSICAL PROPERTIES

PRODUCT	* WATER VAPOR TRANSMISSION AND PERMEANCE RATING		TENSILE STRENGTH ASTM E 154, Section 9	PUNCTURE RESISTANCE ASTM E 154
	GRAINS/SQ. FT/HR	PERMS	LBS. FORCE/INCH	LBS. FORCE
PREMOULDED MEMBRANE VAPOR SEAL with PLASMATIC CORE	0.00045	0.0011	156	149

* Tested by ASTM F 1249, calibrated to ASTM E 96, Water Method.

HANDLING SUGGESTIONS

CUTTING... PMPC can be cut with a roofer's or linoleum knife using a straight edge.

BENDING... To facilitate bending at a change in plane such as at corners or footings, lightly heat the board at the bending area.

STORAGE... Handling of PMPC is not critical because of its strength; however, it is advisable to stack sheets on smooth ground or a wood platform in storage or at the excavation site. This will eliminate the possibility of the material deforming or warping. Rolls of PMPC should be stored in an upright position.

POINTING... Pointing with SEALTIGHT Pointing Mastic should be done wherever an edge is exposed to prevent water from traveling under a sheet.

STOPS MOISTURE MIGRATION IN HORIZONTAL CONCRETE APPLICATIONS**THE ULTIMATE VAPOR BARRIER TO ELIMINATE COSTLY MOISTURE DAMAGE**

Over 80% of the moisture entering a structure originates in the site...it moves from the grade into the structure both as a liquid (capillarity) and as a gas (vapor). The only effective way to eliminate the costly problems of excessive moisture migration is to completely isolate the structure from the site during original construction with the installation of a true vapor seal membrane that is both waterproof and vaporproof. Material that is vaporproof is completely waterproof; however, not everything that is waterproof is vaporproof. **PREMOULDED MEMBRANE VAPOR SEAL with PLASMATIC CORE** is both waterproof and vaporproof.

While tremendously strong, even the best concrete is porous. Uncontrolled vapor will move through it, causing dank musty smells...rust and condensation...damage to mechanical equipment...cracked plaster...chipped paint, efflorescence...warped floors, etc. The installation of a true vapor seal under the concrete floor slabs will stop moisture migration.

A true vapor seal must also be durable and tough enough to withstand normal handling, foot traffic, aggregate impact and backfill abrasion. One tear, or a few pinholes will destroy the entire purpose of the installation. Plastic films, laminated film and paper combinations, reinforced building papers and saturated roofing felts are semi-permeable at best, and will permit the passage of air (vapor) through them. Additional information on the hydrologic cycle may be found in W.R. Meadows Hydrologic Cycle Manual available upon request.

SEALTIGHT PMPC offers the construction industry a positive, easy to install, economical, true vaporproofing system solution.

APPLICATION

HORIZONTAL INSTALLATIONS...ON OR BELOW GRADE: By installing PMPC on the ground prior to placing the concrete floor, moisture will be prevented from coming through the floor slab.

ABOVE GRADE... In addition to the horizontal on or below grade application, PMPC can be placed on the intermediate structural slab forming a "sandwich slab" installation. As a result, moisture is prevented from filtering downward from mechanical floors dedicated to heating and air conditioning equipment. This helps prevent damage to lower floor levels.

HORIZONTAL APPLICATION... PMPC can be applied directly over tamped grade, because it does not require a gravel bed, a bed of sand and/or "crusher rock" prior to the installation of the floor slab, although these practices are acceptable. PMPC works equally well with either side up. However, in areas exposed to prolonged, direct sunlight we recommend poly side up. Material is placed in position by either the "Dutch Lap" method (Figure 1) with laps sealed with SEALTIGHT Catalytic Bonding Asphalt or by the "Butt-Joint" method (Figure 2) with joints sealed with SEALTIGHT PMPC Tape. These methods provide a permanent, monolithic vapor seal without voids or open seams. If desired, on structural floor slabs of multi-level buildings, sheets may be placed in a bed of hot asphalt for continuous adhesion.

Application Tools



Roofer's Knife

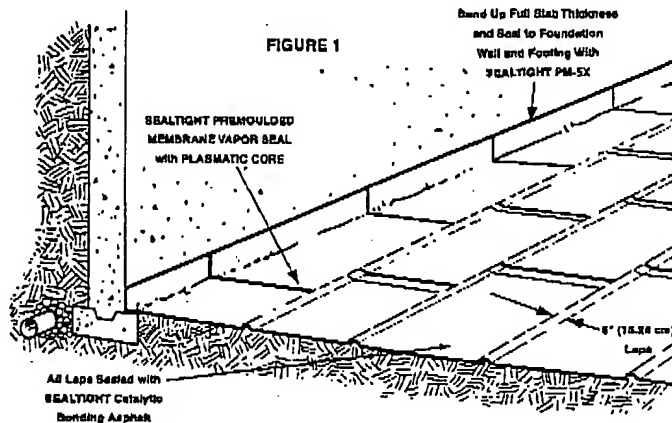


Caulking Gun

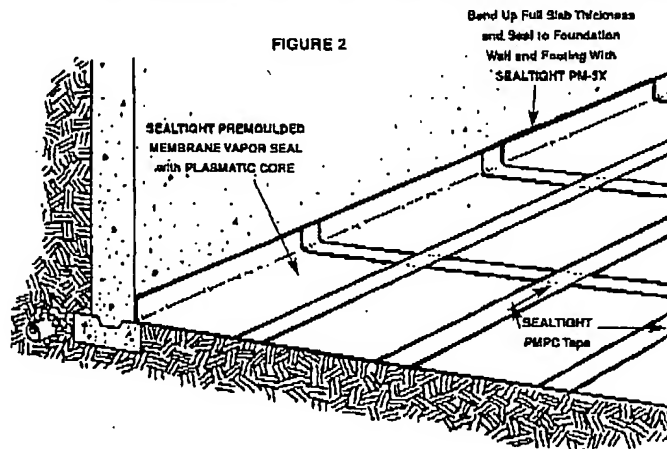


Roller

THE "DUTCH LAP" METHOD (Figure 1): The "Dutch Lap" method of applying PMPC on or below-grade horizontal areas. After removing the polyfilm at the 6" overlap areas, seal all laps with SEALTIGHT Catalytic Bonding Asphalt. Pressure roll or "walk-in" all laps to assure complete adhesion.



THE "BUTT-JOINT" METHOD (Figure 2): The Butt-Joint method of applying PMPC. The sheets are tightly butted together and "Butt-Joints" sealed with SEALTIGHT PMPC Tape. The PMPC Tape is centered on the joints of the felt side and rolled down with pressure for a positive seal.



SEALING PROCEDURES

All protrusions through the concrete slab, such as sewer pipes, water pipes and utility inlets, must have a positive seal between the protrusion and the PREMOULDED MEMBRANE. Place a collar of PMPC at least 12" larger than the protrusion around the protrusion. Seal in place with SEALTIGHT PMPC Tape and point around the protrusion with SEALTIGHT Pointing Mastic.

ACCESSORIES**BONDING ADHESIVES...SEALTIGHT Catalytic**

Bonding Asphalt: A non-setting bitumen that provides a seal that will expand and contract without breaking bond. Use to seal horizontal joints and rebars between impaction sheets on footing. Packaging: 5 Gallon (18.93 liter) Pails.

COVERAGE: 5 Gallons per 1,000 sq. ft. of material.

SEALTIGHT PM-5X...A hard-setting bitumen offering strong initial tack, used to adhere PMPC to vertical surfaces. Packaging: 5 Gallon (18.93 liter) Pails.

SEALTIGHT PMPC Tape...A sturdy, self-adhering, reinforced tape of polymeric membrane that requires no additional adhesive. Provides a simple, easy and economical method of effectively sealing horizontal and vertical butt joints. Each strip is nominally 6" (152.4mm) wide and 50' (15.24m) long. Has quick-strip release paper for ease of handling and application. Packaged 6 rolls per carton.

SEALTIGHT Pointing Mastic is used for sealing top horizontal terminations or slab protrusions.

Packaging: 5 Gallon (18.93 liter) Pails or 29 oz. (857.65 ml) Cartridges. For full details, see Data Sheet No. 740.

ESTIMATING

When estimating the amount of PMPC required, figure the actual area plus 20% for overlap when using sheets...for rolls, figure actual areas plus 12% for overlap.

COVERAGE		
Adhesive	Joint Method	Per MSF of Membrane (Approx.)
Catalytic Bonding Asphalt*	Sheets: 6" (152.4mm) laps	5 gal. (18.93 liters)
	Rolls: 6" (152.4mm) laps	3 gal. (11.36 liters)
PM-5X	Sheets only	40 gal. (151.4 liters)
Hot-Mop Asphalt*	Complete	400-500 lbs. (180-230 kg)
PMPC Tape**	Butt Joints/Overlap	416 linear ft. (126.8 meters)
Pointing Mastic***	Detail Strip, Edge Terminations	2000 lineal ft./gal. (181.0 mL)
*Based on minimum of 1/16" (1.59mm) film thickness		
** WVT/perm rating is .0011		
***1/8"x 1"x 200 lineal feet (3.18mm x 25.4mm x 60.96m)		

PRECAUTIONS

SEALTIGHT PMPC does not negate the need for relief of hydrostatic heads. A complete drain tile system should be placed on the exterior of the footing and, in severe cases, on the interior of the footing as well. If applied to concrete surfaces... repair any spalled areas... fill all voids and remove sharp protrusions. In cooler temperatures, it is advisable to use 4' x 8' sheets of PMPC, as opposed to rolls, which may not roll out flat.

Adhesive coverage ratios must be adjusted to compensate for surface irregularities and additional costs may be required to provide proper adhesion. For maximum concrete performance and durability, the floor slab concrete design should provide for the lowest possible slump and yet assure complete hydration of the concrete. Refer to Material Safety Data Sheet for complete health and safety information.

**LIMITED WARRANTY**

"W.R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order." Read complete warranty. Copy furnished upon request.

Disclaimer

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Smith, Thomas

From: jdwyer@wrmeadows.com
Sent: Tuesday, October 14, 2003 12:44 PM
To: tsmith@btlaw.com
Subject: FW: PMPC Patent Summary



A VAPOR BARRIER
WITH BUILT-IN ...

Tom,

I am forwarding you this email and attachment related to a potential patent for our PMPC. We have come up with a new core material that helps us to have our PMPC product meet a recent ASTM specification that is very stringent.

We began selling this product shortly after the first of the year 2003. After you have reviewed this information, please give Tariq and me a call to discuss.

Jim Dwyer

-----Original Message-----

From: Tariq Malik [mailto:tmalik@wrmeadows.com]
Sent: Monday, October 13, 2003 9:47 AM
To: jdwyer@wrmeadows.com
Subject: PMPC Patent Summary

Will File

Before end
of 2003.

Jim,

Attached is the summary of our PMPC patent invention. After reviewing please e-mail it to our patent attorney for his comments and guideline for application. If you have any question, please let me know.

Regards,

Tariq

A VAPOR BARRIER WITH BUILT-IN PROTECTION COURSE

Inventors: Tariq Malik, James Dwyer

ABSTRACT

A vapor barrier, which meets or exceeds ASTM E-1993 "Standard Specification for Bituminous Water Vapor Retarders Used in Concrete with Soil or Granular Fill Under Concrete Slabs" and a method for making the vapor barrier, is disclosed. The vapor barrier includes an asphalt saturated felt, an asphalt coating, a fiberglass scrim, a unique multi-layer plasmatic core and a poly sheet. The plasmatic core includes a chemically treated polyester laminated aluminum foil. The use of polyester laminated aluminum foil with its excellent adhesion to asphalt coating, saturated felt and fiberglass scrim gives a vapor barrier with water vapor permeance of 0.001 perms and very good puncture and tensile strength.

PE?

SUMMARY OF INVENTION, PLASMATIC CORE

1. Different products including polyethylene, polyesters, saturated felts, PVC, polycarbonate etc. were tried to improve water vapor permeability. None of these products met ASTM E-1993.
2. Different gauge aluminum foil (AL) was tested. The AL foil of minimum 0.00028 gauges showed satisfactory perm ratings. AL-foil as such initiates corrosion but when laminated between polyester coatings it would not corrode.
3. Use of PE-AL-Polyester. No adhesion of PE with asphalt impregnated glass fiber, some adhesion of polyester.
4. Use of Polyester-AL-Polyester. Some adhesion but delamination occurred on shock and at low temperature.
5. Coating of adhesion promoter on Polyester-AL-Polyester, better adhesion at all temperatures and good adhesion at low temperatures. No shock separation.
6. The plasmatic film is composed of aluminum film of 0.0001 to 0.0025 gauge laminated with chemically or physically treated polyester film on both sides using low-density polyethylene as an adhesive. The chemical treatments include but not limited to - - - while physical treatment includes corona and plasma treatment.

less than 0.0025

?

CLAIMS

What is claimed:

1. A vapor barrier comprising
 - a. A saturated felt (method of making felt is described, felt gauge, asphalt spec and conditions).
 - b. An asphalt coating (asphalt specification, temperature of application etc).
 - c. A plasmatic core comprising aluminum foil laminated on both sides by polyester film previously treated with an adhesion promoter.
 - d. A fiberglass scrim (gauge, density etc)
2. The vapor barrier of claim 1 wherein the aluminum gauges range is between 0.0001 to 0.0025.
3. The vapor barrier of claim 1 wherein the polyester is polyethylene teraphthalate (PET)
4. The vapor barrier of claim 1 wherein the polyester is treated with an adhesion promoter comprising of a coating of cross linked copolymer of acrylic or methacrylic acid ester, glycidyl acrylate or methacrylate, a copolymer of acrylonitrile and styrene.
5. The vapor barrier of claim 1 wherein the polyester film is laminated with aluminum foil using pigmented or clear low-density polyethylene adhesive.
6. The vapor barrier of claim 1 wherein the polyester film is physically treated with corona and/or plasma.
7. -----
8. -----
9. -----

BACKGROUND

SUMMARY OF INVENTION

BRIEF DESCRIPTION OF DRAWINGS

DESCRIPTION OF PREFERRED EMBODIMENT

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